

of large size, and differs somewhat in the marginal contour from Australian and New-Zealand specimens; the odd anterior radial area being rather more prominent, and the anterior pair of inter-radial areas flatter in their curvature, which causes the margin of the test to be less fully rounded in front, and the greatest breadth to be more conspicuously posterior to the postero-lateral petals. The marginal contour is, however, subject to such a great amount of variation throughout the family, that we do not consider it of sufficient importance to give a name to the variety; and until a further series of examples is available, we confine ourselves to the simple record of the circumstance.

On the Asteroidea of the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S., Superintendent of the Museum. By W. PERCY SLADEN, F.G.S., Sec. L.S.

[Read 21st June, 1888.]

(PLATE XXVIII.)

THE collection of Asteroidea made by Dr. Anderson in the Mergui Archipelago, although small, is particularly interesting. It is noteworthy, not only from the fact that it contains several new as well as rare forms, but also because some of the examples which I have referred to known species show variations which are sufficient to impart a character to the collection as a whole, and to indicate the existence of local conditions whose action upon types of a more plastic nature than that of the series of forms so far collected would probably result in new morphological developments. That the representatives of other forms occur in this area is highly probable; and it seems to me, therefore, a reasonable expectation that a number of "new species" may ultimately be found in the Mergui Archipelago when further dredging operations are carried out. From what I have seen, I think it is not too bold to throw out the suggestion that the Mergui area may be looked upon as a moulding ground wherein Malayan types assume a modified form, approaching to a certain extent the Indian-Ocean facies, but maintaining a local and independent character.

It is interesting to note that out of twelve species of Asterids from the Andaman Islands recently determined by Prof. F. Jeffrey Bell*, only one—*Archaster typicus*—occurs in the Mergui collection; and out of seven genera, only two are represented—*Archaster* and *Astropecten*.

Dr. Anderson has kindly given me detailed particulars of the localities, which I append verbatim, not only on account of their intrinsic interest, but as furnishing an explanation of the character of the fauna:—

“The locality in King Island from which the Asterids and Echinids were obtained is a small bay on the eastern side of the island, near its northern end. It is well sheltered as it opens towards the north, and is protected by high land to the west, south, and east, the mountains to the west and south rising to an altitude of 2530 and 2125 feet. It is thus completely shut in from the storms of the south-west monsoon. The bay is shallow, as its depth ranges only from 2 to 9 fathoms, the average being 4 fathoms. Its bed is almost entirely covered with a deep deposit of mud brought down by a number of small streams that flow into it, especially at its head, from which the sea retires for about two miles at low water, exposing extensive mud-flats deeply furrowed by the channels of the little rivers. A few small islands occur at the limit of low water, and off one of them my vessel was stationed for about a month. At low tide the mouth of one of the streams was close to the island, in line with its seaward face, while another occupied a similar position on its eastern side. The island was only a few acres in extent, and was surrounded by mud-flats except on its northern side, which had a rocky shore. Here at low water, with a freshwater stream flowing out through the mud-flat on either side, sponges, corals, and Alcyoniid and Gorgoniid Alcyonaria abounded, and were partially exposed at spring-tides, the water bathing them being richly charged with mud. The Asterids and Echinids were found under these conditions, also the Comatulids, and the few Hydroida and Actiniæ, and the great mass of the Mollusca described by Prof. v. Martens.

“The sea between King Island and the mainland, and along the entire coast, from Tavoy Point to the Pak chun estuary, contains

* Proc. Zool. Soc. Lond. 1887, p. 140.

much less salt than it does around the outer islands of the Archipelago, as the Tavoy and Tenasserim rivers discharge a great body of water, supplemented by the outflow of many other but smaller streams. Another result of this freshwater discharge is that the bed of the sea around the inner islands is covered by a thick layer of mud brought down by these rivers. King Island is situated 10 miles to the west of Mergui.

“The conditions, however, that prevail at Owen Island are very different, as this island, which is about 73 miles south of King Island, and nearly 30 miles to the west of the main land, lies fully exposed to the Bay of Bengal. The little bay in this island, visited by me, occurs at its southern end. Its head was margined by bright yellow sand—high and dry—on which were numerous examples of a *Spirula* thrown up during the storms of the southwest monsoon. This sand was succeeded by a bank of coral, while the sides of the bay were strewn with stems and broken fragments of coral, lying over gravel and sand. On this part of the shore I obtained the Echinoderms from Owen Island, and among them, I believe, more than one species of Sand-star—one, a small active form that rapidly buried itself in the sand when the stones under which it was found were disturbed.

“The western side of Sullivan Island also lies open to the Bay of Bengal, and as the prevalent wind at night was from the east, I had, for safety's sake, to anchor my vessel under the shelter of the high land of the island, within some rocky islets that defined a kind of bay into which a number of small streams flowed. When I attempted to dredge, I found the bottom to be composed entirely of mud about one mile from the shore. It yielded a few Mollusca and some immature Pennatulids. In the tidal way between the islets and the main island corals occurred in profusion, and among them I obtained the Echinoderms from Sullivan Island. This island is situated about 13 miles to the south of Owen Island.

“Sir William James Island is 10 miles to the south of Sullivan Island, and out at sea.—J. A.”

Subclass EUASTEROIDEA, *Sladen*.

Order PHANEROZONIA, *Sladen*.

Family ARCHASTERIDÆ (*Viguier*), *emend. Sladen*.

Subfamily ARCHASTERINÆ, *Sladen*.

Genus ARCHASTER, *Müller & Troschel*.

1. ARCHASTER TYPICUS, *Müller & Troschel*.

Archaster typicus, *Müller & Troschel*, 1840 (April), *Monatsber. d. k. Akad. d. Wiss. Berlin*, p. 104; *System der Asteriden*, 1842, p. 65.

Astropecten stellaris, *Gray*, 1840 (November), *Ann. & Mag. Nat. Hist.* vol. vi. p. 181.

Archaster nicobaricus, *Möbius* (n. sp. *Behn, MS.*), 1859, *Neue Seesterne des Hamburger und Kieler Museums*, p. 13 (*Abhandl. a. d. Gebiete Naturw. hrsg. v. d. naturwiss. Verein, Hamburg*, Bd. iv. Abth. 2, 1860).

Localities. King Island (native name *Padaw*); Feb. 1882. Sir William James Island; 7th Dec. 1881.

Family ASTROPECTINIDÆ (*Gray*), *emend.*

Subfamily ASTROPECTININÆ, *Sladen*.

Genus ASTROPECTEN, *Linck*.

1. ASTROPECTEN ANDERSONI, n. sp. (Plate XXVIII. figs. 1-4.)

Localities. King Island (native name *Padaw*); Feb. 1882; sublittoral. Sullivan Island (native name *Lampi*); Feb. 1882; 10 fathoms.

Rays five. $R=50$ mm.; $r=12$ mm. $R>4r$.

Breadth of a ray between the third and fourth supero-marginal plates, 10.5 mm. The majority of the examples collected are about two thirds this size.

Rays elongate, narrow, tapering gradually to the extremity, which is rather obtuse. Disk small. Interbrachial arcs slightly rounded.

The paxillar area is compact and uniform, from three to four times the breadth of the supero-marginal plates at about midway between the base and the extremity of the ray. The paxillæ are moderately large and distinctly stellate, the tabulum bearing in the centre from one to four short papilliform spinelets, and the

margin surrounded by eight to twelve rather longer claviform spinelets, which radiate horizontally. There is a little diminution in the size of the paxillæ towards the centre of the disk, and much crowding, but no trace occurs of any epiproctal prominence or peak whatever, its position being frequently occupied by a slight invagination. The paxillæ are arranged in short transverse rows at the sides of the rays, the irregular median space being broad. The paxillæ become very small towards the end of the rays.

The supero-marginal plates, which are about thirty in number from the median interradial line to the extremity, are small, rather higher than broad, the disproportion of the dimensions being greatest at the base of the ray, and appear slightly tumid when viewed from above. They are covered with papilliform granules which are uniform in size and shape, and not very closely placed; and fine cilia are present in the furrows between successive plates. Each supero-marginal plate bears near its abactinal margin a single erect tapering spinelet, the size of the spinelets decreasing gradually along the ray.

The infero-marginal plates, which are broader than high, extend slightly beyond the level of the superior series, and form a gently rounded curve towards the actinal surface. Each plate bears a single elongate, delicate, subcylindrical, sharply pointed lateral spine, directed horizontally and at an angle of about 45° to the axis of the ray. Behind the lateral spine is a single small companion, similar in shape and character, but not more than one third the length. In large specimens the first miliary spinelet or squamule near this spine may be larger than any of the others; but there is no trace whatever of a transverse series of spinelets along the aboral margin of the plate. In large specimens there may also be a single small spine above and external to the large lateral spine. The surface of the plate is covered with short papilliform spinelets rather than squamules, which are robust, uniform, and widely spaced; and the furrows are occupied by numerous, more delicate and cilia-like spinelets.

The armature of the adambulacral plates consists of short and rather robust spines, which form only two distinct series. The inner or furrow series consists of three short, cylindrical, slightly tapering spinelets, which radiate apart and arch over the furrow, the middle spine being longest. The outer series consists of two unequal spinelets, the aboral one being very large, robust,

conical and pointed, and the companion one little more than one fourth the length, cylindrical and obtusely tipped. The large robust spine stands perpendicularly, and the small papilla is usually directed at an angle towards the furrow and adorally. On the outer surface of the plates near the base of the ray, especially in large examples, there may be one or two similar papillæ; but I do not consider them sufficiently important to rank as a third series.

The mouth-plates are elongate and narrow, with a single row of eight to ten short, robust, conical spinelets on their surface, which are very small outwardly, but increase in length as they approach the mouth, the innermost spine being longer than any of the others and directed horizontally. On the free margin of the mouth-plate there is a lineal series of short, rather robust spinelets, directed horizontally, which increase in length as they approach the inner extremity of the plate; the innermost spinelet, being very little shorter than the innermost spinelet of the superficial series above-mentioned and standing on the same level, forms with it the horizontal fan of mouth-spines which proceeds from each mouth-angle and covers the mouth.

The madreporiform body is small, and situated at about its own diameter distant from the margin.

Colour in alcohol, a light shade of chocolate-brown, or an ashy grey, in the latter case being lighter.

Remarks. This species is the most nearly related to *Astropecten javanicus*, Lütken, from which, however, it may be distinguished by the narrow marginal plates, by the character of the adambulacral armature, and by the spinulation of the infero-marginal plates. The facies of the two forms is quite different, although, from its general structure, I am inclined to think that *A. Andersoni* is probably a descendant of *A. javanicus*, or of a common ancestor, modified by isolation and changed conditions of existence.

2. ASTROPECTEN HEMPRICHII, Müller & Troschel.

Astropecten Hemprichii, Müller & Troschel, 1842, *System der Asteriden*, p. 71.

? *Astropecten articulatus*, Michelin, 1845, *Essai d'une Faune de l'Île Maurice*, *Mag. de Zool.* 2^e série, 7^e année, p. 24 (non *Asterias articulatus*, Say, 1825).

Astropecten mauritianus, Möbius, 1881, *Beitr. z. Meeresfauna d. Insel Mauritius*, p. 50 (non *Astropecten mauritianus*, Gray, 1840).

Locality. Sir William James Island; 7th Dec. 1881.

Remarks. I feel little hesitation in referring a single example to this species, which has recently been carefully described and figured by De Loriol* on the basis of material obtained from Mauritius. The type specimen, preserved in the Berlin Museum, was collected by Hemprich and Ehrenberg in the Red Sea. The form appears to be closely allied to *Astropecten scoparius*.

3. *ASTROPECTEN NOTOGRAPTUS*, n. sp. (Plate XXVIII. figs. 5-8.)

Locality. King Island (native name *Padaw*).

Rays five. $R=16.5$ mm.; $r=6$ mm. $R>2.5r$. Breadth of a ray between the second and third supero-marginal plates, 5.5 mm.

Rays rather broad at the base, tapering rather rapidly on the outer portion to a pointed extremity. Interbrachial arcs subacute.

The paxillar area is wide, measuring more than three times the width of the supero-marginal plates about midway between the base and the extremity of the ray, and is very regular in composition. The paxillæ, which are large and compactly crowded, have a wide tabulum on which are borne from five to eight low uniform granules; and eight to eighteen very short papilliform spinelets, little more than elongate granules, surround the margin and radiate outward horizontally. In the centre of the disk a well-developed conical peak is present.

The supero-marginal plates, about seventeen or eighteen in number from the median interradiial line to the extremity, are slightly broader than long, and form a well-developed rounded margin to the ray. The surface of the plates is covered with large, slightly spaced granules which diminish a little in size at the margins, and become more or less cilia-like in the sutures or channels between neighbouring plates. On the innermost plate on each side of the median interradiial line is a small, but well-developed tubercle; but no spinelets or tubercles of any kind are borne on the other supero-marginal plates.

The infero-marginal plates, which are much broader than high, do not extend beyond the superior series. Each plate bears a single lateral spine, of moderate length, which tapers throughout, is sharply pointed, cylindrical, and very slightly flattened. At the base of this spine are one or two small compressed spinelets

* Mém. Soc. Phys. Hist. Nat. Genève, t. xxix. No. 4, p. 74, pl. xxi. figs. 7, 8.

or enlarged squamules, one of which is usually more prominent and near the aboral margin of the plate. No other spinelets are present on the infero-marginal plates, which are covered with rather large, moderately well-spaced, uniform squamules.

The armature of the adambulacral plates consists of short robust spinelets, which form two distinct series and an indistinct median series. The inner or furrow series consists of three short, robust, obtusely tipped spinelets which radiate apart and arch over the furrow, the middle spine being longest. The outer series consists of two spinelets which are shorter and more robust than the furrow series, and have a flat subspatulate form; and the aboral spinelet of the pair is frequently larger and much broader than its companion, but sometimes subequal. The indistinct median series consists of two very small papilliform spines, one placed on each margin of the plate, which might almost be counted as the outer spinelets of a furrow series of five spinelets.

The mouth-plates are elongate and narrow, with a single row of eight to ten short, robust, papilliform spinelets on their surface, which are small outwardly but increase in length as they approach the mouth, the innermost spinelet being longer than any of the others and directed horizontally. On the free margin of the mouth-plate there is a lineal series of short, rather robust spinelets, directed horizontally, which increase in length as they approach the inner extremity of the plate, the innermost spinelets being long and forming the horizontal fan of mouth-spines which proceed from each mouth-angle and cover the mouth. The adambulacral plate adjoining the mouth-plate is much broader and shorter than the others, and bears a lineal series of eight or nine short papilliform spinelets on each side, the two series being apposable.

The madreporiform body is entirely hidden by paxillæ.

Colour in alcohol, an ashy grey mottled with lines and bars of chocolate-brown. On the inner third of the ray there is a line of colour adjacent to the marginal plates which is continuous with and meets the corresponding band of the adjacent ray on the disk, forming a V-shaped mark thickened in the angle. At the junction of the median and outer third of the ray is a broad transverse band of colour which passes over the paxillar area and marginal plates uninterruptedly.

Remarks. This species is allied to *Astropecten granulatus*, Müller & Troschel; but is distinguished by the character of the

marginal plates, by the spinulation of the infero-marginal plates, and by the armature of the adambulacral plates. The presence of the small tubercle on the innermost pair of supero-marginal plates in the interbrachial arc, and the colour markings also serve to distinguish the forms. *Astropecten notograptus* presents several points of affinity with *A. monacanthus*, mihi; but the broad marginal plates, the large paxillæ, the simple spinulation of the infero-marginal plates, and the difference in the character of the adambulacral armature (although only slight) serve to distinguish the Mergui species.

Subfamily LUIDIINÆ, *Sladen*.

Genus LUIDIA, *Forbes*.

1. LUIDIA FORFICIFER, *Sladen*.

Luidia forficifer, *Sladen*, 1888, *Zool. 'Chall.' Exp.* part li., *Report on Asteroidea*, p. 258, pl. xlv. figs. 5 & 6, pl. xlv. figs. 5 & 6.

Localities. King Island (native name *Padaw*); Feb. 1882. Sir William James Island; 7th Dec. 1881.

Remarks. One adult example, unfortunately in a bad state of preservation, and a small one, almost too young for accurate determination, appear to me to belong to this species. It was dredged during the 'Challenger' Expedition in the Arafura Sea and in Torres Strait at a depth of 6 to 28 fathoms, on sea-bottoms of coral-mud and green mud.

2. LUIDIA MACULATA, *Müller & Troschel*.

Luidia maculata, *Müller & Troschel*, 1842, *System der Asteriden*, p. 77.

Locality. King Island (native name *Padaw*); 24th Jan. 1882; sublittoral.

A single young example having nine rays. The major radial dimension is 65 mm.

Family PENTAGONASTERIDÆ, *Perrier*.

Subfamily GONIODISCINÆ, *Sladen*.

Genus GONIODISCUS, *Müller & Troschel*.

1. GONIODISCUS ARTICULATUS (*Linné*), *de Loriol*.

Asterias articulata, *Linné*, 1753, *Mus. Tessinianum*, p. 114, tab. ix. fig. 3.

Artocreatis altera species, *Seba*, 1758, *Thesaurus*, t. iii. p. 11, tab. vi. figs. 7 & 8.

Goniaster articulatus, *Lütken*, 1864, *Videnskab. Medd. naturh. Foren. i Kjöbenhavn*, p. 147.

Goniodiscus articulatus, *De Loriol*, 1884, *Rec. Zool. Suisse*, t. i. p. 638, pl. xxxv. figs. 1-1j.

Locality. King Island (native name *Padaw*); Jan. 1882; sublittoral.

Remarks. This handsome form was described and figured by Linné in the 'Museum Tessinianum;' and the same example is stated by Lütken* to have been the original of Seba's figure in his 'Thesaurus,' t. iii. pl. 6. figs. 7 & 8. Until four years ago the species—excepting the existence of the well-preserved type—might be said to have been lost sight of, and its locality was unknown.

In 1884, M. P. de Loriol gave a careful description and excellent figures of an example collected at Singapore; he also discussed the erroneous views of previous writers on the species in question. With M. de Loriol's determination I entirely agree; and his description accords closely with the notes which I made when examining the Linnean type of *Asterias articulata* in the University Museum at Copenhagen.

The specimen collected at Mergui by Dr. Anderson is intermediate in size between Linné's specimen and that described by de Loriol, the measurements being $R=66$ mm., $r=34$ mm. In general outline it approaches more nearly to the type than does de Loriol's large example, the interbrachial arc being more widely rounded, which causes the rays to appear rather more defined. In other respects the Mergui example accords closely with the description of that from Singapore; and I feel no doubt as to the specific identity of the three examples.

Family ASTERINIDÆ (*Gray*), *emend. Perrier*.

Subfamily ASTERININÆ, *Sladen*.

Genus NEPANTHIA, *Gray*.

1. *NEPANTHIA SUFFARCINATA*, n. sp. (Plate XXVIII. figs. 9-12.)

Locality. Owen Island; 2nd Jan. 1882.

Rays five. $R=48$ mm.; $r=13-15$ mm. $R>3r$. Breadth of

* *Videnskab. Medd. naturh. Foren. i Kjöbenhavn*, f. 1864, p. 148.

a ray at the base, 15 mm.; breadth at 10 mm. from the base, 10 mm.

Rays elongate, semicylindrical, flattened actinally, broad and inflated at the base, then rapidly becoming narrower, and maintaining a nearly uniform breadth until near the extremity, which is obtusely rounded. Interbranchial arcs acute. Abactinal area of the disk more or less inflated, marked with well-defined channels along the median interradial lines which extend nearly to the centre. Actinal surface plane; with the margin abruptly angular.

The abactinal area is covered with small, narrow, conspicuously crescent-shaped plates, which are disposed in regular alternating longitudinal rows. Within the concavity is placed a single papula, which is guarded on its adcentral side by small plates (usually two in number, but sometimes more are present), all included within the arc of the crescentiform plates. The plates bear a great number of uniform microscopic spinelets which form a compact velvet-like covering. The plates along the sides of the ray are somewhat modified in form, often appearing jawbone-shaped rather than crescent-shaped, and the longitudinal disposition of the series is even more conspicuous than in the median radial region.

The marginal plates are very small, and the infero-marginal series forms the angular ambitus of the ray, the superior series being quite in the lateral wall of the ray. The plates of the inferior series are slightly larger and more definite than their companions, and all bear compact groups of microscopic spinelets similar to those on the abactinal plates.

The armature of the adambulacral plates consists of:—(1) A furrow series of 7 or 8 spinelets united by membrane, which radiate apart, and form a fan slightly obliquely placed and high in the furrow; the spinelets are cylindrical, obtusely tipped, and the middle ones are longer than the others. (2) On the actinal surface of the plate is an obliquely placed semicircular fan of 5 or 6 obtusely conical, robust, papilliform spinelets which radiate apart; and behind these is an irregular tuft of minute cilia-like spinelets.

In the actinal interradial areas four longitudinal rows of intermediate plates extend along the ray up to the extremity; on the disk four other rows may be counted, but these die out gradually, and do not extend far beyond the base of the ray. The plates of

the series adjacent to the adambulacral plates are slightly larger than any of the others; and all the intermediate plates bear compact tufts of numerous microscopic conical and sharply pointed spinelets.

The madreporiform body is rather large, and is situated nearer the centre of the disk than midway between that point and the margin. Its surface, which is somewhat undulating, is marked with wide and much convoluted striations. Several prominent small plates surround the margin.

Colour in alcohol, a dirty ashy grey, with a slightly brownish shade.

Remarks. This species in some respects occupies an intermediate position between *Nepanthia maculata*, Gray, and *Nepanthia brevis*, Perrier; but it differs from both of these by its general facies, by the different character of the lateral series of plates along the ray, by the small, truly crescentiform plates of the median abactinal area, and by the character of the armature of the adambulacral plates.

Genus ASTERINA, *Nardo*.

1. ASTERINA CEPHEUS (*Müller & Troschel*), *v. Martens*.

Asteriscus cepheus, *Valenciennes*, MS.

Asterina Burtonii, *Gray*, 1840, *Ann. & Mag. Nat. Hist.* vol. vi. p. 289.

Asteriscus cepheus, *Müller & Troschel*, 1842, *System der Asteriden*, p. 41.

Asterina cepheus, *v. Martens*, 1866, *Archiv f. Naturgesch.* Jahrg. xxxii. Bd. i. p. 85.

Localities. King Island (native name *Padaw*); Feb. 1882. Sir William James Island; 7th Dec. 1881.

Remarks. The examples of this species collected in the Mergui Archipelago are rather more discoid than usual, the interbrachial arcs being less incurved than usual; the spinulation also is much more delicate and cilia-like. The differences, however, do not appear to me to be sufficient to warrant their recognition by name; and a good series of examples is desirable before they can be ranked as a variety with any degree of certainty.

DESCRIPTION OF PLATE XXVIII.

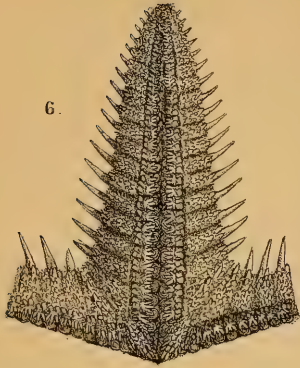
- Fig. 1. *Astropecten Andersoni*, n. sp. Abactinal aspect, magnified $1\frac{1}{2}$ diameters.
2. " " Actinal aspect, magnified $1\frac{1}{2}$ diameters.
3. " " A portion of the abactinal surface, magnified 15 diameters.
4. " " Adambulacral and infero-marginal plates, magnified 8 diameters.
5. *Astropecten notograptus*, n. sp. Abactinal aspect, magnified 3 diameters.
6. " " Actinal aspect, magnified 3 diameters.
7. " " A portion of the abactinal surface, magnified 40 diameters.
8. " " Adambulacral and infero-marginal plates, magnified 14 diameters.
9. *Nepanthia suffarcinata*, n. sp. Abactinal aspect, magnified $1\frac{1}{2}$ diameters.
10. " " Actinal aspect, magnified $1\frac{1}{2}$ diameters.
11. " " A portion of the abactinal surface, magnified 15 diameters.
12. " " Adambulacral plates and adjacent portion of the actinal surface, magnified 15 diameters.

Report on the Mammals, Reptiles, and Batrachians, chiefly from the Mergui Archipelago, collected for the Trustees of the Indian Museum. By JOHN ANDERSON, M.D., LL.D., F.R.S., F.L.S., F.Z.S., &c.

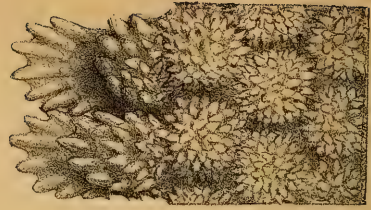
[Read 20th June, 1889.]

As the object of the Expedition sent by the Indian Museum to Mergui was to bring together materials for the illustration of the marine fauna of that portion of the Bay of Bengal, it was impossible to undertake a systematic investigation of the vertebrate fauna of the islands themselves.

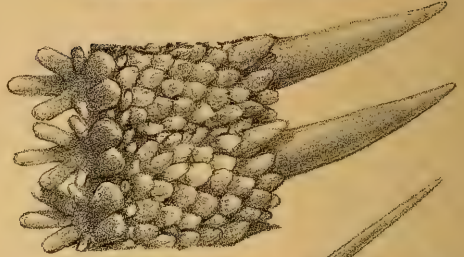
A small collection, however, of Mammals, Reptiles, and Batrachians was formed, and it is now proposed to place the names of the species on record. The Mammalia number 23, the Reptilia 53, and the Batrachia 12 species.



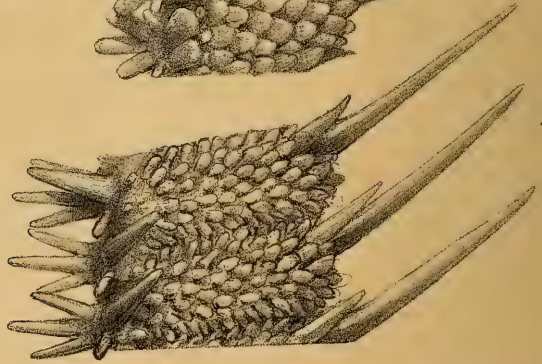
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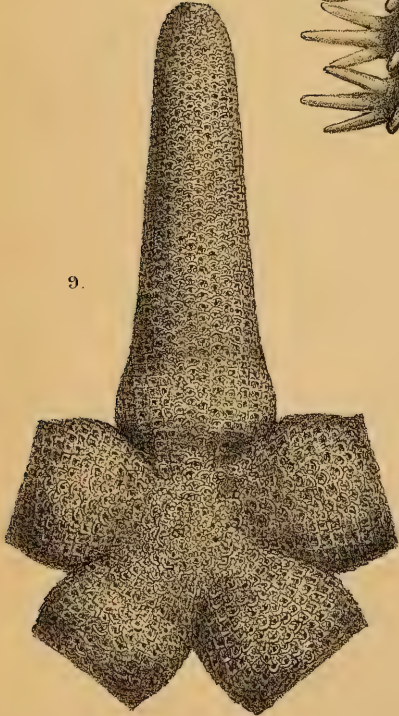
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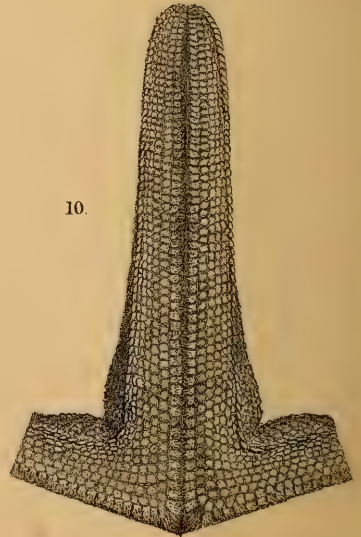
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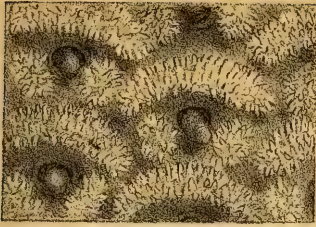


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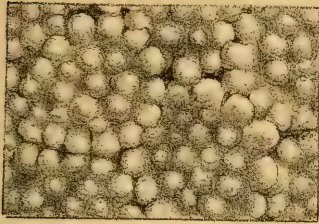


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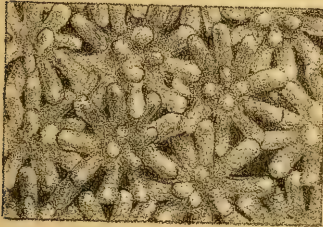
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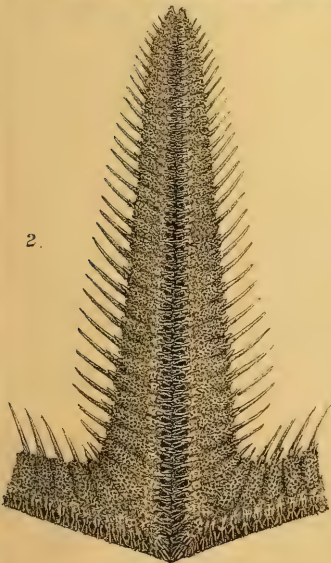
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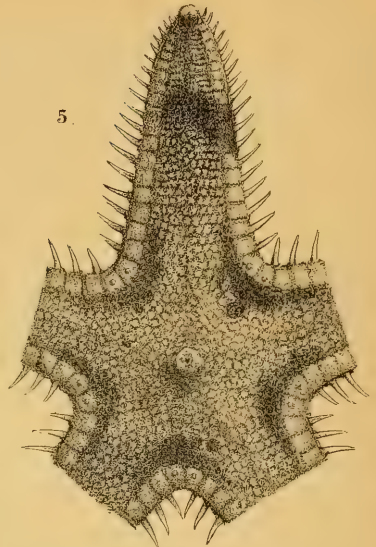
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5.



1.

